

$$\frac{-b}{2a} = -1 \Rightarrow -a = b$$

$$\begin{cases} a + b + c = 1 \\ a - b + c = 9 \end{cases} \Rightarrow \begin{cases} a + b = -1 \\ a + b = -2 \end{cases} \Rightarrow b = -1$$

$$a = -\frac{1}{2} \Rightarrow c = \frac{1}{2}$$

$$y = -x^2 - 2x + 1 \checkmark$$

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$$\Delta > 0 \rightarrow m^2 - 1(m+4) > 0 \Rightarrow m^2 - 1m - 4 > 0 \Rightarrow \frac{-(-1) \pm \sqrt{1+16}}{2} = \frac{1 \pm \sqrt{17}}{2}$$

$$q > 0 \rightarrow \frac{-m}{2} > 0 \Rightarrow m < 0 \quad I \quad I$$

$$p > 0 \rightarrow \frac{m+4}{2} > 0 \Rightarrow m > -4 \quad I \quad I \quad I$$

$$I \cap I \cap I \rightarrow (-4, -1) \checkmark$$

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$$\alpha + \beta = \frac{1}{\alpha\beta} \rightarrow \frac{1 - 2m}{2} = \frac{m}{2-m} \Rightarrow (2-m)(1-2m) = 9$$

$$3x + (2m-1)x + 2-m = 0$$

$$\Rightarrow m^2 - 2m - 15 = 0$$

$$\begin{aligned} m &= \frac{2 \pm \sqrt{4+60}}{2} \\ m &= -1 \quad \times \\ m &= \frac{4}{3} \end{aligned}$$

$$2 \leq m \leq 5 \rightarrow (m-1)^2 - 12(2-m) > 0$$

$$-1: (-3)^2 - 12(3) > 0 \Rightarrow 9 - 36 > 0 \quad \times$$

$$\frac{4}{3}: (\frac{4}{3}-1)^2 - 12(2-\frac{4}{3}) > 0 \Rightarrow \frac{1}{9} - 16 + 16 > 0 \quad \checkmark$$

$$s: x_1^2 + \frac{1}{x_1} + x_2^2 + \frac{1}{x_2} = (x_1^2 + x_2^2) + \left(\frac{x_1 + x_2}{x_1 x_2}\right) \rightarrow (s^2 - 2p) + \left(\frac{s}{p}\right) = 1 + 12 - \frac{1}{3} = \frac{35}{3}$$

$$\begin{aligned} x^2 - x - 5 &= 0 \rightarrow s = 1 \\ x^2 - s^2 + p &= 0 \rightarrow 5x^2 - 0 + 12x - 22 &= 0 \end{aligned}$$

$$p: (x_1^2 + \frac{1}{x_1})(x_2^2 + \frac{1}{x_2}) = x_1^2 x_2^2 + \frac{x_1^2}{x_2} + \frac{x_2^2}{x_1} + \frac{1}{x_1 x_2} \rightarrow p^2 + s^2 - 2p + \frac{1}{p} = -\frac{4}{3} + 1 + 1 - \frac{1}{3} = -\frac{2}{3}$$

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$$\left(\sqrt{x^2} + \frac{1}{\sqrt{x^2}} + 1\right)(\sqrt{x^2} - 1) = 2\sqrt{x} \Rightarrow x\sqrt{x} - \sqrt{x^2} + x - \frac{1}{\sqrt{x^2}} = 2\sqrt{x}$$

$$\Rightarrow \frac{x^2 - 1}{\sqrt{x^2}} = 2\sqrt{x} \Rightarrow 4x = x^2 - 1 \Rightarrow x^2 - 4x - 1 = 0$$

$$x_1 + x_2 = s = \frac{-b}{a} \rightarrow \frac{4}{1} = 4 \checkmark$$

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$$\alpha\beta = \gamma\beta^r \Rightarrow \alpha = \pm\gamma$$

$$\frac{\gamma}{\gamma} = \gamma\beta^r \Rightarrow \beta^r = \frac{\gamma}{\gamma} \Rightarrow \beta = \pm \frac{\gamma}{\gamma}$$

$$+\gamma: 1\gamma - \gamma\alpha + \gamma = 0 \Rightarrow \alpha = 1$$

$$-\gamma: 1\gamma + \gamma\alpha + \gamma = 0 \Rightarrow \alpha = -1$$

$$1 - (-1) = 1\gamma \checkmark$$

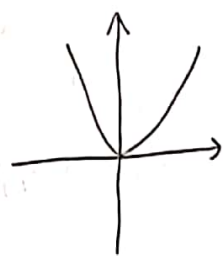


$$a: \alpha > 0 \quad (1)$$

$$\Delta: (\gamma + \gamma\alpha)^r > 0 \checkmark$$

$$\gamma: \frac{-\gamma - \gamma\alpha}{\gamma\alpha} > 0 \rightarrow \frac{-1 - \alpha}{\alpha} > 0$$

$$\frac{-1 - \alpha}{\alpha} > 0 \Rightarrow \frac{-1 - \alpha}{\alpha} > 0$$



$$(\gamma + \gamma\alpha)^r = 0$$

$$\gamma + \gamma\alpha = 0$$

$$a = -\frac{\gamma}{\gamma} \text{ II}$$

$$(2) -\frac{\gamma}{\gamma} < a < 0 \text{ I} \rightarrow \emptyset$$

$$|U| \rightarrow -\frac{\gamma}{\gamma} \leq a < 0$$

$$\frac{-a}{\gamma} = \frac{\gamma}{-\gamma} \Rightarrow a = \gamma$$

$$\gamma^r + \gamma\gamma - \gamma = 1 \Rightarrow \gamma^r + \gamma\gamma - \gamma = 0$$

$$\Rightarrow \gamma = -\gamma, \gamma = 1$$

$$\gamma^r + \gamma\gamma - \gamma = -\gamma^r - \gamma\gamma + b$$

$$\gamma\gamma^r + \gamma\gamma - \gamma - b = 0$$

$$\gamma = 1 \rightarrow \gamma + \gamma - \gamma - b = 0 \Rightarrow b = \gamma$$

$$\gamma = -\gamma \rightarrow 1 - \gamma - \gamma - b = 0 \Rightarrow b = \gamma$$

$$ab = 1 \checkmark$$

$$\gamma\gamma^r - a\gamma + b = 0 \quad \alpha \quad \beta$$

$$\alpha + \beta = \frac{a}{\gamma} \quad \alpha\beta = \frac{b}{\gamma}$$

$$\gamma\alpha\gamma^r + a\gamma - b = 0$$

$$\alpha + \beta = \frac{-a}{\gamma}$$

$$\alpha'\beta' = -\gamma$$

$$\alpha + \beta = \alpha' + \beta' + 1 \Rightarrow \frac{a}{\gamma} = \frac{-a}{\gamma} + 1 \Rightarrow a = 1$$

$$\alpha'\beta' = (\alpha - \frac{1}{\gamma})(\beta - \frac{1}{\gamma}) = \alpha\beta + \frac{1}{\gamma} - \frac{1}{\gamma}(\alpha + \beta)$$

$$\alpha'\beta' = \frac{b}{\gamma} + \frac{1}{\gamma} - \frac{1}{\gamma} \Rightarrow \frac{b}{\gamma} = -\gamma \Rightarrow b = -\gamma$$

$$\left[\frac{ab}{\gamma}\right] = \left[\frac{-\gamma}{\gamma}\right] = \left[-\frac{\gamma}{\gamma}\right] = -1 \checkmark$$

$$\gamma^r + \gamma\gamma - \gamma m = \gamma^r + \gamma\gamma + m = 0$$

$$\Rightarrow \gamma\gamma = -\gamma m$$

$$\Rightarrow \gamma = -m$$

$$\Rightarrow \gamma^r + \gamma\gamma - \gamma = 0$$

$$\Rightarrow \gamma = -\gamma \vee \gamma = 0 \checkmark$$

$$\gamma^r + \gamma\gamma - 1 = 0 \Rightarrow \gamma = -1 \quad \gamma = \gamma$$

$$\gamma^r + \gamma\gamma + 1 = 0 \Rightarrow \gamma = -1 \quad \gamma = -1$$

$$\gamma - (-1) = \gamma \checkmark$$

$$\gamma^r + \gamma\gamma - \gamma m = 0 \xrightarrow{\gamma = -1} 1 - 1 - \gamma m = 0 \Rightarrow m = 0$$